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GENERAL NOTES

An Unusual *Hybognathus* (Osteichthyes, Cyprinidae) from Lower White River, Arkansas

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The cyprinid genus, *Hybognathus*, is currently treated as containing seven species (Schmidt, 1994) of which three have been documented to occur in Arkansas, namely, *Hybognathus nuchalis* (Mississippi silvery minnow), *H. placitus* (Plains minnow), and *H. hayi* (cypress minnow) (Robison and Buchanan, 1988). A fourth species, *Hybognathus argyritis* (western silvery minnow), known from neighboring Missouri, but not heretofore collected from Arkansas, is the focus of this paper.

Hybognathus nuchalis, H. argyritis, and *H. placitus* constitute a close-knit group having recent distributional relationships that seem to reflect their distributions in preglacial times (Pflieger, 1971). *H. nuchalis* is widespread in the central Mississippi Valley whereas *H. argyritus* has its distributional center in the upper Missouri River system, and *H. placitus* is widespread in the central and plains states. Pfleiger (1971) resurrected the name *Hybognathus argyritis* Girard for the form in the Missouri River system, and he restricted the name *H. nuchalis* Agassiz to the form in the central Mississippi Valley.

On 17 October 2003 a University of Tennessee Regional Faunas class collected and preserved 45 *Hybognathus* specimens from river miles 14-15, lower White River, Desha/Arkansas county line, Arkansas. One of these (39 mm SL) has a basioccipital process characteristic of *H. argyritis*, a species not known from Arkansas (Robison and Buchanan, 1988). It was entered into the University of Tennessee Research Collection of Fishes (UT) as *H. argyritis* (UT 44.10001). Etnier noted at the time that its eye did not seem appreciably smaller than that of a 41 mm SL specimen of *H. nuchalis* from the same collection (UT 44.10002, 44 specimens, 41-75 mm SL). A more careful examination of the "*H. argyritis*" specimen indicated that its eye was even larger (3.2 mm) than that of the 41 mm SL *H. nuchalis* from UT 44.10002 (3.0 mm). Comparison with a 40 mm SL *H. argyritis* (UT 44.7179) from Missouri River Mile 16.4 made it clear (eye diameter 2.1 mm) that we did not have a typical specimen of *H. argyritis*.

Two characters serve to best separate *H. nuchalis* from *H. argyritis* - the shape of the basioccipital process and the size of the eye. Pflieger (1971) stated that the only truly diagnostic character for separating *H. nuchalis* and *H. argyritis* is the shape of the basioccipital process. In *H. nuchalis*, the basioccipital is greatly expanded posteriorly, and the posterior margin is deeply emarginate (Niazi and Moore, 1962; Fig. 21). The process in *H. argyritis* is less expanded posteriorly, and the posterior margin is truncate or only shallowly emarginate (Etnier and Starnes, 1993; Fig. 82). In *H. placitus* the basioccipital process is narrow and peg-like with the muscles nearly touching at the point of attachment to the process whereas the process itself is broad and blade-like with muscles well-separated at the point of attachment to the basioccipital process in *H. nuchalis* and *H. argyritis* (Pflieger, 1997).

Eye length is greater in *H. nuchalis* than in *H. argyritis*. In *H. nuchalis* the eye diameter is greater than the width of the mouth opening whereas in *H. argyritis* the eye diameter is less than the mouth opening. In *H. argyritis* the head length is 4-4.8 times the eye diameter whereas in *H. nuchalis* the eye is slightly larger, and head length is only 3.6-4.2 times the eye diameter.

Possible identifications of this lower White River specimen are (1) a southern "race" of *H. argyritis* with a large eye; (2) a hybrid between *H. placitus* and *H. nuchalis*; (3) a hybrid between *H. nuchalis* and some other cyprinid; (4) a misidentification of a non-*Hybognathus* minnow; (5) a riverine waif of *H. hayi*, a species associated with cypress swamps; (6) mere within population variation in basioccipital shape in *H. nuchalis*; or (7) an unknown species of *Hybognathus*. Possibility (2) seems unlikely, as *H. placitus* is known from only extreme western Arkansas and has an extremely small eye; (3) and (4) seem unlikely as the coiled gut, black peritoneum, and pharyngeal tooth count and shape are typical for *Hybognathus*, and the specimen is definitely not *Notropis nubilus*; (5) a 39 mm SL *H. hayi* from the Hatchie River system, TN, has a much more terminal mouth and more broad basioccipital process (1.1 mm vs. 0.6 mm); and (6) we examined the basioccipital process of all 44 specimens in UT 44.10002 and from hundreds of additional *Hybognathus* collected in the lower Mississippi River and have not noted visible variation. The most likely possibilities are thus a large-eyed southern race of *H. argyritis* or an unknown species. Since a dam is already

under construction at White River mile 0.5, efforts should be made to secure additional specimens in the lower White and Arkansas rivers and adjacent Mississippi River.

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